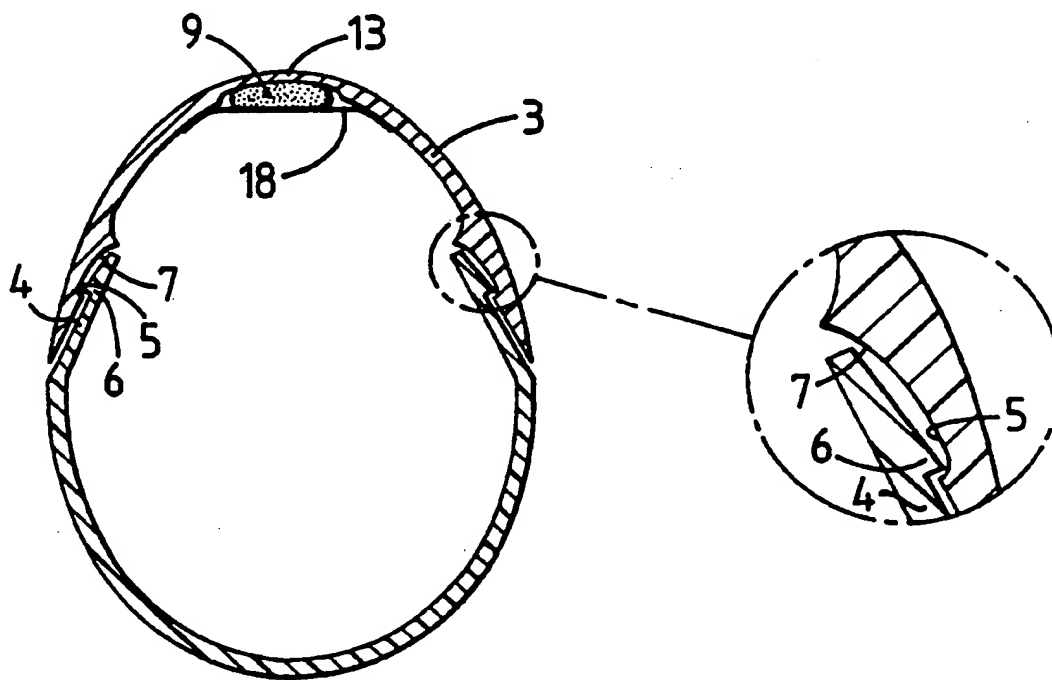


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(54) Title: CONTAINER



(57) Abstract

The present invention provides a container comprising first (2) and second (3) portions releasably connectable to one another spring means (4) arranged to urge the portions apart when connected and latch means (6) arranged to hold the portions together until released by relative movement between the first and second portions. The container is preferably in the shape of an egg and is adapted to contain a novelty gift.

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CONTAINER

The present invention relates to a container and in particular to such a container for holding and releasing, when required, novelty items such as for example small gifts, eg paper hats, jokes etc.

At celebratory occasions, particularly those of a festive nature, it is considered customary and entertaining to make available items such as crackers to enhance the general atmosphere of the event. Crackers, for example provide an amusing manner in which to distribute small party-type tricks or presents. A contributory factor in the fun element of items such as crackers is the unknown nature of the trick/present contained therein until the cracker is opened. The cracker moreover is usually designed to 'crack' when the two ends thereof are pulled apart by way of a small explosive arrangement.

Crackers are however prone not to perform as intended, namely the cracker material tears in an erratic and undesirable manner such that its contents are either thrown unpredictably therefrom or not released at all. The cracker furthermore often fails to 'crack' usually as a result of the material thereof not tearing as intended or the holders of the cracker being unable to grasp its ends sufficiently tightly. Also the cracker is a party accessory deemed appropriate to certain festivities for example Christmas but inappropriate to others.

According to the present invention there is provided a container comprising first and second portions releasably connectable to one another, spring means arranged to urge the portions apart when connected and latch means arranged to hold the portions together until released by relative movement between the first and second portions.

In a preferred embodiment the latch means is releasable by relative movement of the portions together, the portions themselves being releasable only if their separating relative velocity exceeds the positional recovery velocity of the latch means required to re-establish connection thereof.

With such an arrangement, whilst moving the portions of the container together results in the releasing of the latch means, the portions may nevertheless not become detached. The portions may only move apart on disengagement of the latch means in this arrangement if they are initially moved together such that their separating velocity exceeds the positional recovery velocity of the latch means required for reconnection thereof, for example as a result of a sharp tap to one of the portions. Undesired releasing of the portions can thus be avoided, such as may occur if the portions are inadvertently compressed in transit or handling operations.

The portions may alternatively be releasable by distorting the shape of either portions so as to release the latch means. This effect may be separate from or additional to that mentioned above for releasing the portions.

The first or second portion may include a stop to limit the relative movement of the portions together, the stop imparting a reactive separating force on the portions if they are urged together further than permitted by the stop.

Preferably the latch means comprises a resilient arm member provided on the first portion, the distal end of the arm member being arranged to engage with a catch provided on an internal surface of the second portion.

In the preferred embodiments the resilient arm member also serves to urge the connected portions apart thereby acting as the spring means. The arm member is thus formed of a material having a resilience which can impart a relative velocity to

the portions which exceeds that with which the end of the arm member can re-engage the catch to re-establish connection of the latch means. In this manner the portions become disengaged only on receipt on a sharp tap, the portions being
5 propelled away from one another in such an event. If the portions are pushed together other than by way of a sharp movement and then released, the arm member may be able to re-engage with the catch to re-establish connection of the latch means.

10

The catch is preferably provided on an internal surface of the second portion such that the latch means is internal of the portions and thus out of sight when the portions are connected together.

15

In the preferred embodiments the arms are arranged to project from the first portion in a direction substantially parallel to that of the direction of connection of the portions. Where the portions meet in a common plane, the arm members will
20 preferably project in a direction normal to the plane of connection. This is to give the maximum level of propulsion whilst at the same time minimising the distortion of the portion carrying the arm members.

25 A plurality of arm members may be provided around the periphery of the first portion. Such arm members may then engage with an annular catch provided on the inner surface of the second portion. The arm members are preferably of a stepped configuration at their ends to thereby latch over the
30 catch provided on the second portion.

The container may be formed in an egg or heart shape, or a similarly shaped container having at least one converging end. The arm members engaging the internal surface of the second
35 portion are thus urged inwardly when the portions are assembled. The resilience of the arm members acts to urge the

portions apart in the assembled state such that if the latch means is released, the portions move away from one another.

Where the internal surfaces of the container converge at the ends, the latch means is naturally disengaged if the portions are moved towards one another by the camming action of the inside surface of the second portion on the arm members provided on the first portion. Of course a suitable camming surface may additionally be provided either to provide or enhance this camming effect. The additional deflection of the arm members also serves to increase the forces urging the portions apart.

In a preferred embodiment, such a camming surface is a raised annular surface on the internal face of the second portion. Any suitable surface may of course be used.

Preferably an outer surface of at least one of the portions includes a section inclined relative to the direction in which the portions are connectable. In this way if the container is supported such that movement thereof relative to the support in the connection direction is permitted, then the inclined surface may act as a camming surface thereby generating inward forces on the container's sides as the container is moved in the support. Such inward forces can be harnessed to enhance or provide the primary means for disengaging the latch means. A similar effect may occur if the support for the container has inclined surfaces.

The peripheral profile of the portion may be irregular and/or provided with a protrusion or protrusions such that the inward forces can be localised to a specific point or area or points or areas, namely those having the greater external dimensions. With strategic arrangement of the latch means, this effect can be harnessed to enhance disengagement of the portions. Where the container is provided in an egg shape, its cross-section

may be made elliptical or formed from circle sections having different radii.

In the preferred embodiments the end of one of the portions
5 incorporates an explosive cap. This may be in the form of a
'fun snap' provided on the inner surface of one end of the
portion and the portion may have a reduced wall thickness at
that end. In a more sophisticated arrangement the cap includes
a plunger that is slidably received in an aperture provided
10 in the portion end, the plunger being arranged to detonate the
explosive cap when struck.

The container is preferably formed from plastics, eg a
polyalkylene especially polyethylene or polypropylene, or a
15 polystyrene or polystyrene copolymer, by injection moulding.

The invention will now be described by way of example and with
reference to the accompanying drawings of which:

20 Figure 1 shows a perspective view of a container in an
unassembled state according to an embodiment of the present
invention;

Figure 2 shows a perspective view of an upper portion of the
25 container of Figure 1 on its side;

Figure 3 shows a perspective view of the container of Figures
1 and 2 in an assembled state;

30 Figure 4 shows a cross-sectional side view of the container
of Figures 1 to 3;

Figures 4a to 4c show cross-sectional views of alternative
latch means for use with the container of Figures 1 to 4;

35 Figure 4d shows perspective views of the lower portion of
Figures 1 to 4;

Figure 5 shows a cross-sectional view of the container taken along the line V-V of Figure 3;

Figures 6a to 6d show cross-sectional views of alternative upper portion arrangements; 6e shows a side elevation from below of an interfitting member for engagement with a cap shown in plan from above in Figure 6f.

Figure 7 shows a perspective view of a container in part cross-section according to a further embodiment of the present invention.

Figure 1 shows a container 1 having two portions 2, 3 in an unassembled state. The container is generally egg-shaped although other suitable shapes may of course be used.

The first, and in this case lower, portion 2 has at its periphery a plurality of resilient arm members 4 which are arranged to project substantially in a direction parallel to the axis of the container, i.e. in the direction of connection of the portions. The arm members form part of a latch means between the portions 2, 3 of the container, the other part being a catch (3a) in the form of an annular detent or ridge 5 on the inside surface of the upper portion 3 of the container as shown in Figure 2. The arm members could of course be placed on the upper portion 3 with the annular detent or ridge on the lower portion 2.

The arm members 4 are of a triangular shape and may be provided in a stepped configuration at their ends 6 to thereby latch over the ridge provided on the upper portion. Any appropriate latch means may of course be employed. The engaging surfaces of the arm members and ridge are suitably contoured to allow relatively easy disengagement as shown in Figure 4. In this regard, ease of disengagement can be enhanced if the edges of the end of each arm member that engage the detent are formed at a relatively small angle

compared with that of the detent so that only a slight axial movement is required to release the latch means. As shown in the enlarged view taken from Figure 4 (with the latch means in the locked position), the cross-section of the ends 6 of the arm members 4 may in preferred embodiments be formed relatively square or rectangular so as to ensure contact of the arm member with the camming surface 7 of the upper portion 3. In this way the releasing action of the latch means can be improved.

10

The arm members 4 also serve to urge the connected portions apart as a result of being deflected inwardly when the portions are assembled, thereby acting as a spring means between the portions.

15

In order for the portions to become detached, the latch means must be disengaged. This can be effected in a number of ways, as shown in Figures 4a to 4d.

20 Figures 4a and 4b show the latch means being released by way of movement of the portions together. In Figure 4a, relative movement of the upper and lower portions 2,3 cause the end 6 of arm members 4 to engage the camming surface 7 provided on the inner surface of the upper portion 3. The upper portion also travels over the main body of the lower portion. The arm member 4 is thereby deflected inwardly such that the latch is released. In Figure 4b the arrangement is similar but differs in that the lower portion 2 is additionally provided with an annular stop 20. If the portions are moved together such that the lower periphery 21 of the upper portion 3 strikes the stop 20 a reactive force is imparted on the upper portion thereby assisting to propel the portions apart. In both instances for the portions to be released, their separating velocity must exceed the recovery velocity of the arm members required to re-establish connection of the latch means.

In Figures 4c and 4d an alternative method of releasing the latch means is shown. In this method no movement of the portions in the direction of connection is required. In this connection the latch means may be released by distorting
5 either of the portions. In the more usual case, the lower portion 2 is distorted by compressing it on opposite side as shown in Figure 4d. The effect of such a compression results in the majority of the arm members being deflected inwardly, i.e. those on the sides where the compressive 'squeeze' forces
10 are directed. Such arm members are released from the catch as shown in Figure 4c. Whilst a few of the arm members do not deflect inwardly but outwardly, there are not sufficient of such arm members to prevent the latch means as a whole from being released. For distortion of the portions to be possible,
15 they must be formed relatively thin and/or of a suitably resilient material. The annular stop 20 is shown but is optional and may be omitted as in Figure 4A.

For the arrangements involving a moving together of the
20 portions in the connection direction the arm members are formed of a material having a resilience which is capable of imparting a relative velocity to the portions which exceeds the speed at which the ends of the arm members can re-engage the catch to re-establish connection of the latch means. In
25 this manner the portions may only become disengaged on receipt on a sharp tap, the portions being ejected away from one another in such an event. If the portions are pushed together other than by way of a sharp movement and then released, the arm members may be able to re-engage with the catch to re-
30 establish connection of the latch means.

Where the container is formed in an egg shape, or a similarly converging end-sectioned container, the fact that the arm members 4 project in a parallel direction to the axis of the
35 container determines that they are urged inwardly when the portions are assembled. The resilience of the arms acts to urge the portions apart in the assembled state such that if

the latch means is disengaged, the portions move away from one another. The parallel nature of the arm members acts to give the portions the maximum level of propulsion whilst at the same time minimising the distortion of the lower portion.

5

Since the portions of the container converge at the ends, the latch means is naturally disengaged if the portions 2, 3 are moved towards one another by the camming action of the inside surface of the upper portion 3 on the ends of arm members 4.

10 They are also disengaged if the upper portion is distorted by a sharp blow. An additional camming surface 7 may be provided either to obtain or enhance this camming effect. The greater degree to which the arm members are deflected inwardly, the greater the forces generated urging the portions apart.

15 Camming surface 7 is provided as a raised annular surface on the inner face of the upper portion. Any suitable surface may of course be used.

The lower portion of the container has surfaces 14 which are
20 inclined relative to the direction in which the portions are connectable. In this way if the container is supported in for example an egg box 8, then downward movement of the container in the box will generate inward forces F on the container's sides at specific points, namely those having the greater
25 external dimensions as shown in Figures 3 and 5. This squeezing effect may distort the lower portion and can thus be harnessed to enhance or provide the means for disengaging the latch means. A similar action can occur if eg. the egg box is provided with support surfaces inclined relative to the
30 connecting direction of the portions.

The outer surface of the lower portion in the region of the inclined surface 14 may be provided with protrusions or the cross section of the portion in this region may be non regular
35 such that the inward forces can be localised to specific points on the portion. In the embodiment shown in Figure 5, the cross section is made up of circle sections having

different radii, namely A and B. With such a cross-section the egg shaped container is stably supported in the egg box. When the larger dimensioned sections B of the portion are squeezed together the portion deforms until sections A touch the support sides, in so doing releasing the latch means. With strategic arrangement of the latch means, this effect can be harnessed to enhance disengagement of the latch means.

One of the portions, eg the upper portion 3 may incorporate an explosive cap 9. The explosive cap may comprise a 'fun snap' adhesively secured eg, by adhesive tape 18, to the inside surface of the portion as shown in Figure 4. Pieces of grit in the 'fun snap' detonate the explosive charge.

Alternatively the cap may include a plunger 9a, preferably of metal, which is received in an aperture 9b in the upper portion as shown in Figures 6a and 6b. A housing 9c is placed over the lower part of the plunger and is secured either by adhesive tape 18 as shown in Figure 6a or is housed in a modified upper portion 15 as shown in Figure 6b. Of course any suitable means for securing the explosive charge may be used. The plunger 9a is formed as a stepped cylinder so as to prevent it becoming detached from the portion. Striking the plunger with sufficient force will detonate the cap.

In the simple cap arrangement not including a plunger, the upper portion may have a reduced wall thickness 13 at the end where the charge is attached as shown in Figure 4.

A particularly effective arrangement of this type is to be found shown in Figure 6c. In this arrangement, an upper portion of reduced wall thickness 13a is provided with a protrusion 13b. This protrusion 13b impinges upon the top surface of the cap 9. The upper portion 3 is fitted with thickened portions or blocks 3b defining a channel into which is introduced a screw-threaded member 19 with a pin formation

19a therefor. Sharp depression of the upper portion 13a causes the cap 9 to explode.

5 In an alternative arrangement as shown in Figure 6d, 6e and 6f, the integrally-moulded upper portion of Figure 6c is replaced by an interfitted flanged member 30. The flanged member 30 fits into the upper portion 3. The flanged ends 30a acting as latches and fitting between the blocks 3b as best shown in Figures 6e and 6f. This retains the member 30 in the 10 recess 21 but also retains the cap 9 juxtaposed the pin formation 19a. Sharp depression of the member 30 will drive the cap 9 against the pin 19a thereby causing the same to explode.

15 In use of the container it is placed in some form of packaging, for example an egg-box or the like. A number of such containers may be so provided, decorated perhaps in accordance with a particular event or festivity, eg a birthday or Easter. The container may in this regard come in any shape 20 appropriate to a particular occasion, eg a heart for Valentines day or a witch for Halloween. The containers are provided in assembled form with novelty items such as jokes, paper hats, trinkets enclosed. At the appropriate moment the containers can be opened by imparting relative movement to the 25 portions, either by exerting a sharp downward force on the upper portion or by 'squeezing' one of the portions, thereby releasing the latch means as described above. A downward force may be effected by tapping the container with a spoon 10, this being particularly appropriate should the container be shaped 30 and dressed up to look like an egg.

The explosive cap 9 provided in the top of the upper portion of the container will on impact of the spoon explode to provide an amusing audible confirmation that the container has 35 opened in addition to the visual effect of the upper portion being ejected from the container. The explosive may also have

a beneficial effect in helping to eject the upper portion and may be associated with a streamer.

Figure 7 shows an alternative arrangement by which the upper and lower portions of the container can be urged apart. In this regard spring and latch arrangements 11 and 12 serve to releasably connect the upper and lower portions of the container. On downward movement of the upper container 3, arm 16 deforms over point 17, which acts as a fulcrum. This releases latch 12 thereby permitting the upper and lower portions to spring apart.

This is particularly effective if instead of being formed of a plastics material, the container is formed of a comestible product such as chocolate. In such an arrangement the upper portion 3 and the lower portion 2 are arranged to move together on receiving a sharp blow against the spring loading 11. This enables the two chocolate halves 2 and 3 to spring apart to reveal a gift and subsequently to be eaten. To effect this, the arm 16 and the latch arrangement 11 and 12 are formed separately and provided with a web (not shown) for incorporation into the chocolate egg halves on the moulding thereof. The arm and lateral arrangement are not comestible and are discarded.

The container is more usually however formed from plastics eg a polyalkylene especially polyethylene or polypropylene, or a polystyrene or polystyrene copolymer, by injection moulding.

The egg-shaped container is particularly susceptible to injection moulding techniques. The two half-egg shaped portions can each be readily manufactured using a moulding tool having two appropriately shaped halves, namely a moving half and a stationary half. The top half of the egg requires a smooth outer surface while the inner surface is rough with small undercuts. The bottom half has a smooth inner surface and an outer surface with small undercuts. The stationary tool

half corresponds to the outer surface of the top half and the inner surface of the bottom half. The moving tool half corresponds to the inner surface of the top half and the outer surface of the bottom half. In operation, when the moulding
5 is formed, both halves thereof will stick in the moving half of the tool. They can then be easily removed from the moving tool half by the use of ejection pins or compressed air.

CLAIMS

1. A container comprising first (2) and second (3) portions releasably connectable to one another, spring means (4.11) arranged to urge the portions apart when connected and latch means (6.12) arranged to hold the portions together until released by relative movement between the first and second portions.
2. A container as claimed in claim 1 wherein the latch means (6.12) is releasable by relative movement of the portions together, the portions themselves being releasable only if their separating relative velocity exceeds the positional recovery velocity of the latch means required to re-establish connection thereof.
3. A container as claimed in claim 1 wherein the portions are releasable by distorting the shape of either portion (2.3) so as to release the latch means (6).
4. A container as claimed in any preceding claim wherein the first or second portion includes a stop (20) for limiting relative movement of the portions together.
5. A container as claimed in any preceding claim wherein the latch means comprises a resilient arm member (6) provided on the first portion (2) the distal end of which is engagable with a catch (3a) provided on a internal surface of the second portion.
6. A container as claimed in any preceding claim wherein the resilient arm members urge the portions apart.
7. A container as claimed in any preceding claim wherein the latch means (6) includes a plurality of arm members (4) provided around the periphery of the first portion (2) the arm

members being engagable with an annular catch (3a) provided on the second portion.

8. A container as claimed in any of claims 5 to 7 wherein
5 each arm member (4) is arranged to project from the first portion (2) in a direction substantially parallel to the direction of connection of the portions.

9. A container as claimed in any of claims 5 to 8 wherein
10 each arm member (4) is of a stepped configuration at its distal end.

10. A container as claimed in any preceding claim wherein the container is in the shape of an egg or a heart.

15 11. A container as claimed in any preceding claim wherein a camming surface (5a) is provided on the internal surface of the second portion for deflecting the end of the each arm member (4) inwardly.

20 12. A container as claimed in any preceding claim wherein the outer surface of at least one of the portions includes an section inclined relative to the direction in which the portions are connectable.

25 13. A container as claimed in claim 12, wherein the peripheral profile of the portion having an inclined surface may be irregular and/or provided with a protrusion or protrusions.

30 14. A container as claimed in any preceding claim wherein the cross-section of the container is elliptical or is formed of circle sections having different radii.

35 15. A container as claimed in any preceding claim wherein an end of one of the portions incorporates an explosive cap (9) and/or streamer.

16. A container as claimed in claim 15 wherein the cap is associated with a plunger arrangement (9a).

17. A container as claimed in any preceding claim wherein the container contains a hat and/or a joke and/or other novelty items.

18. A container as claimed in any preceding claim wherein the container is formed from plastics by injection moulding.

10

19. A container as claimed in either of claims 1 or 2 wherein the first and second portions (2.3) are formed of a commestible product, and wherein latch means (12) retain an arm (16) against a spring bias (11) prior to release.

15

20. A container as claimed in claim 19 wherein the latch means and the arm respectively comprise a web which is positioned in the commestible product during moulding thereof.

20 21. A container as claimed in either of claims 19 or 20 wherein the commestible product is chocolate.

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FIG. 1

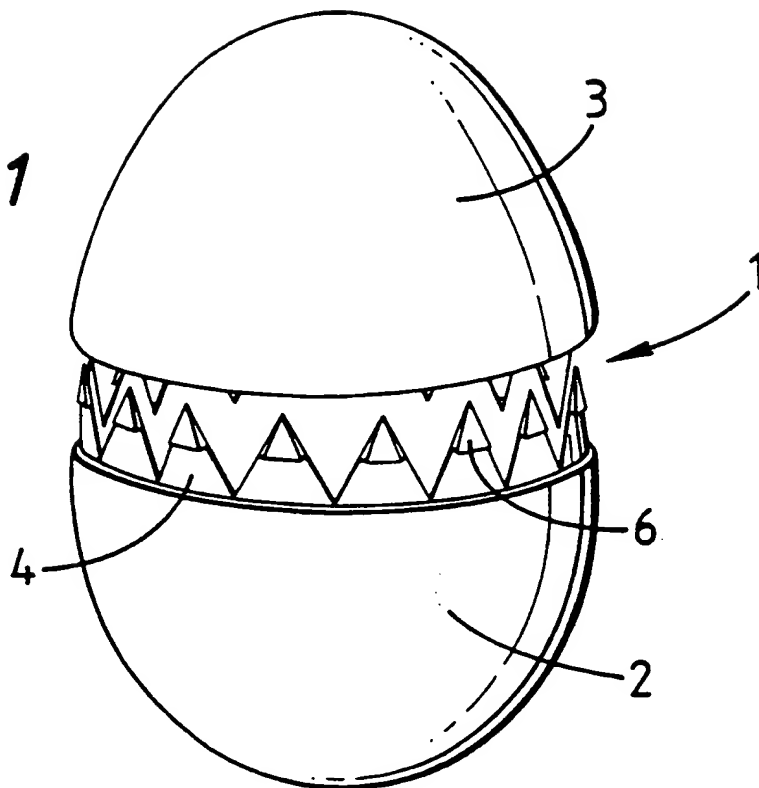
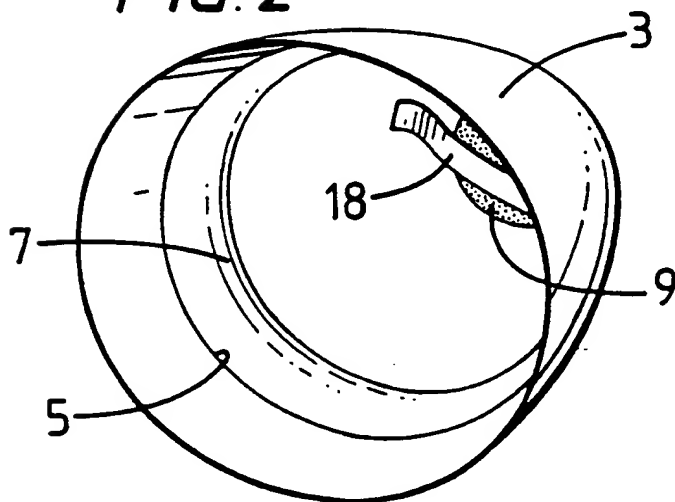


FIG. 2



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FIG. 3

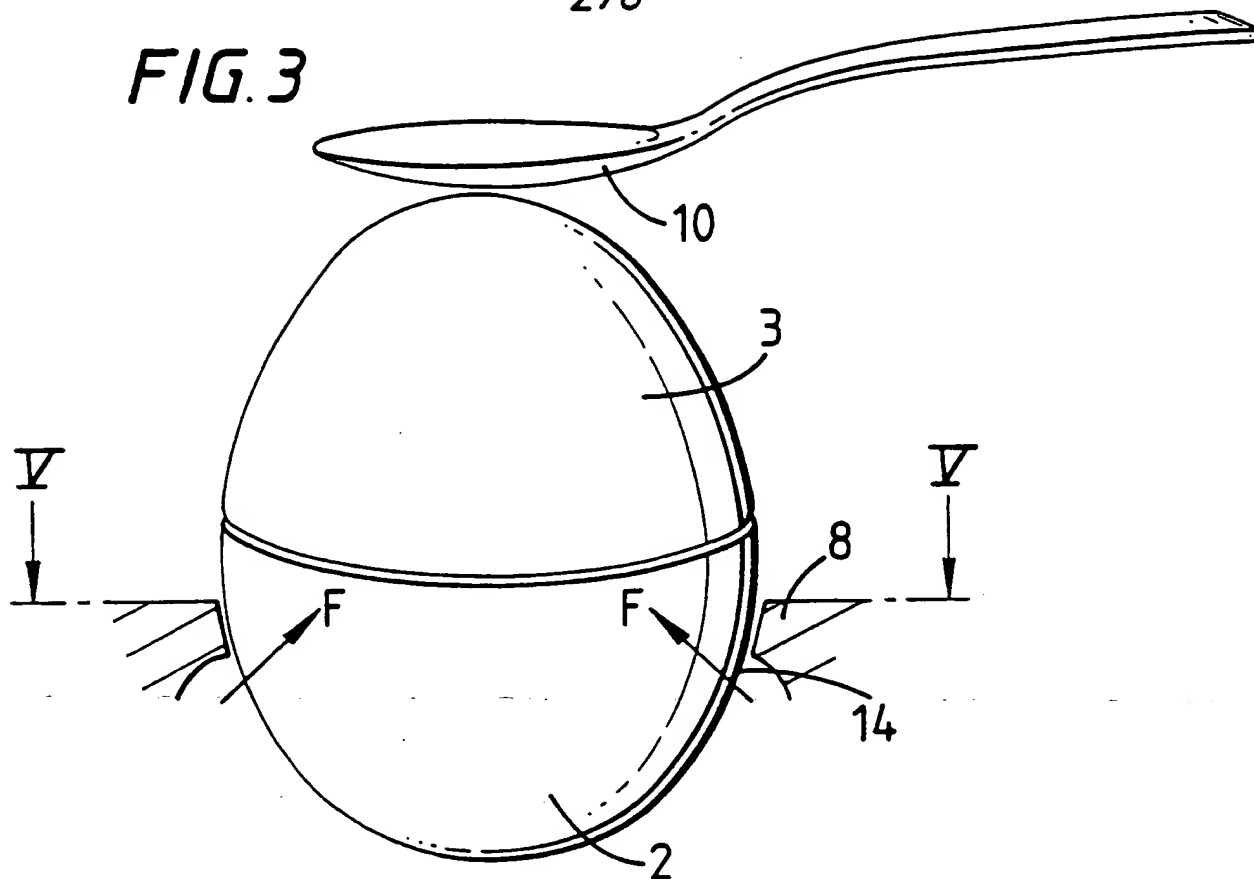
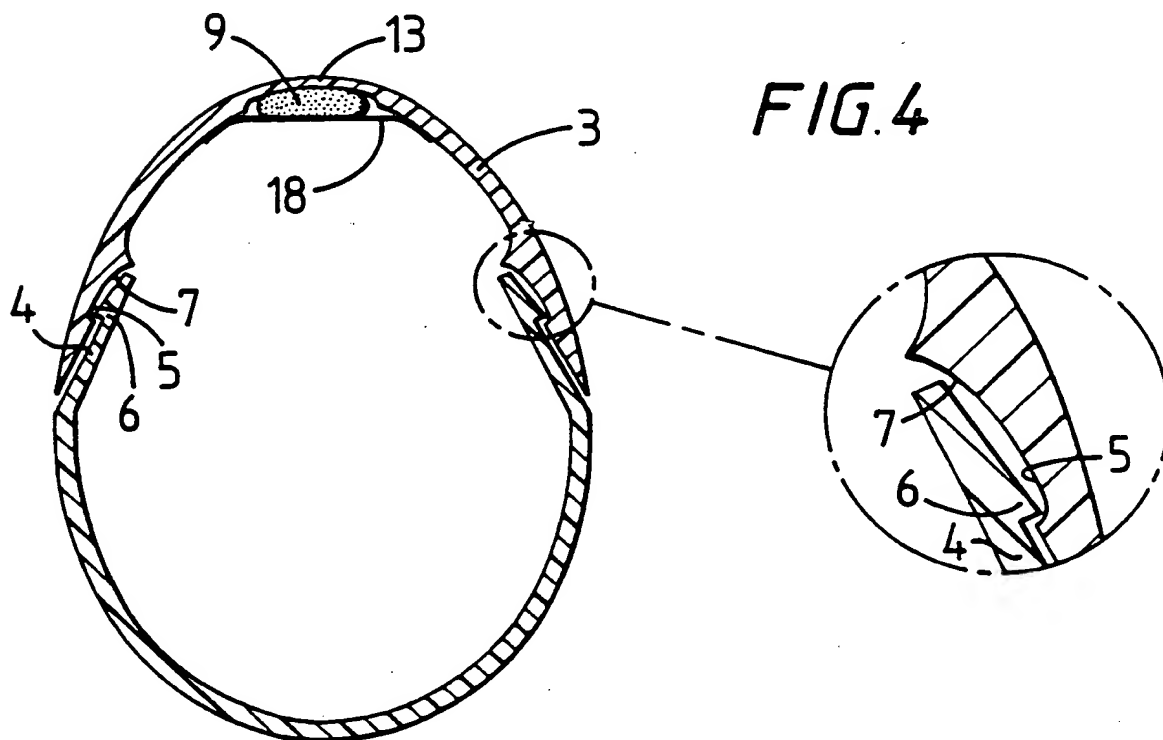


FIG. 4



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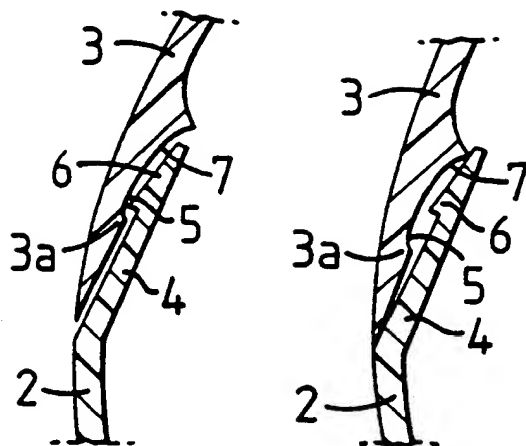


FIG. 4a

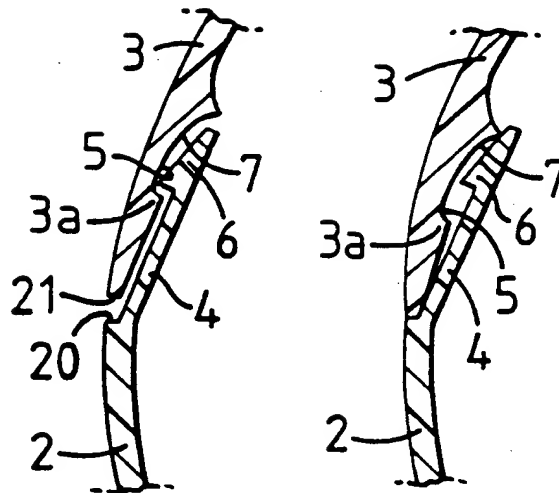


FIG. 4b

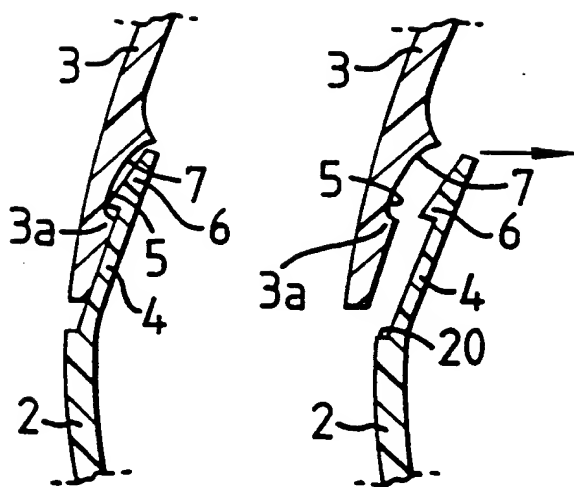


FIG. 4c

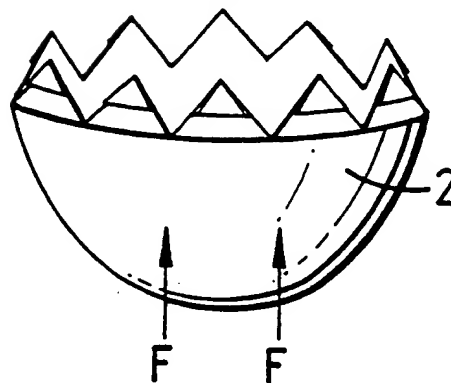
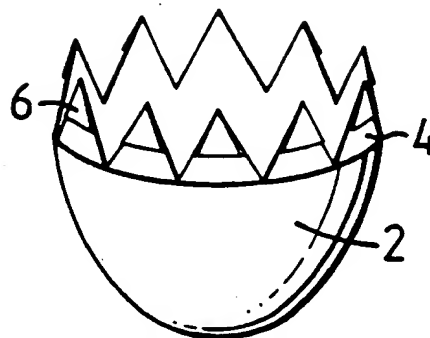


FIG. 4d

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FIG. 5

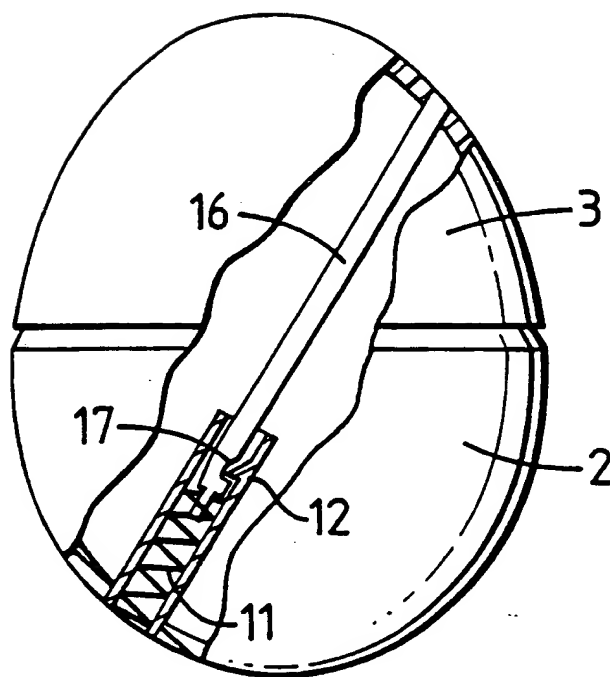
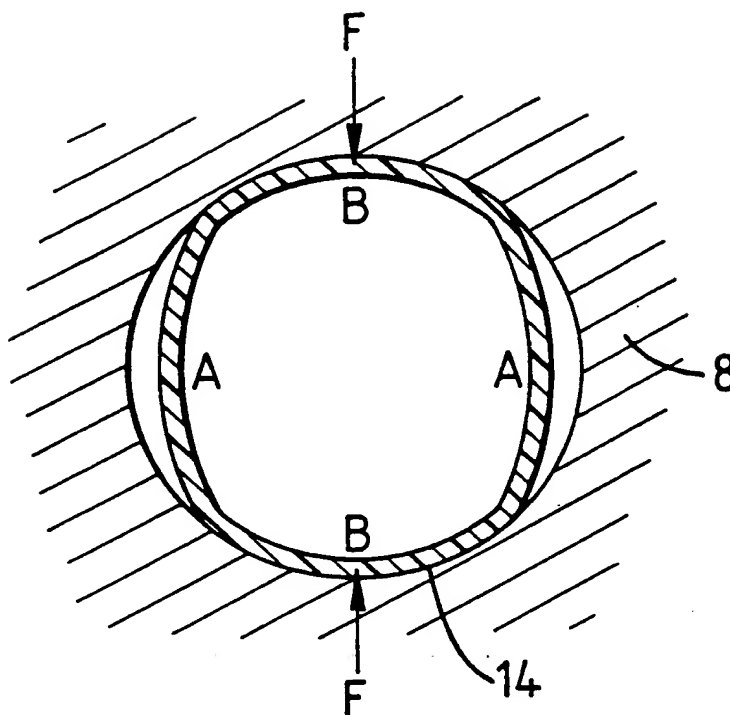


FIG. 7

FIG. 6a

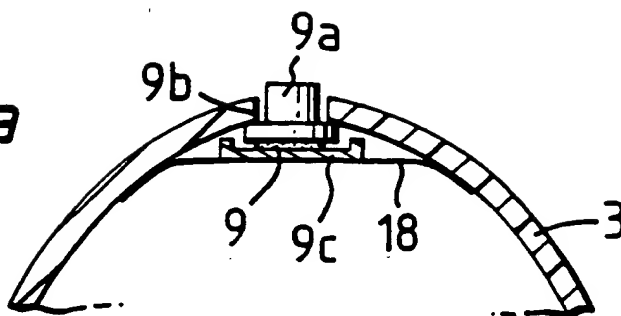


FIG. 6b

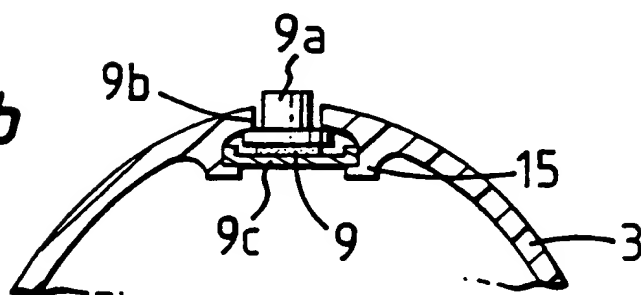
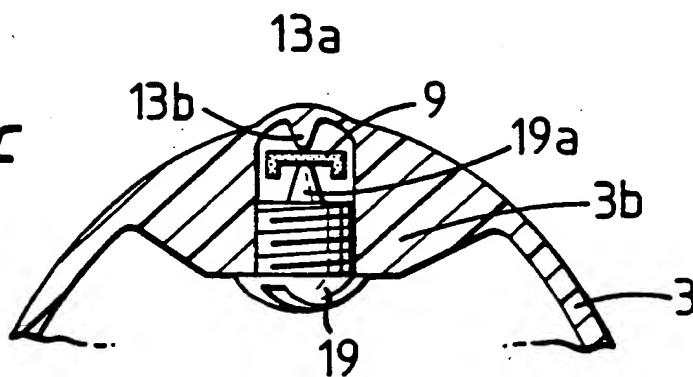
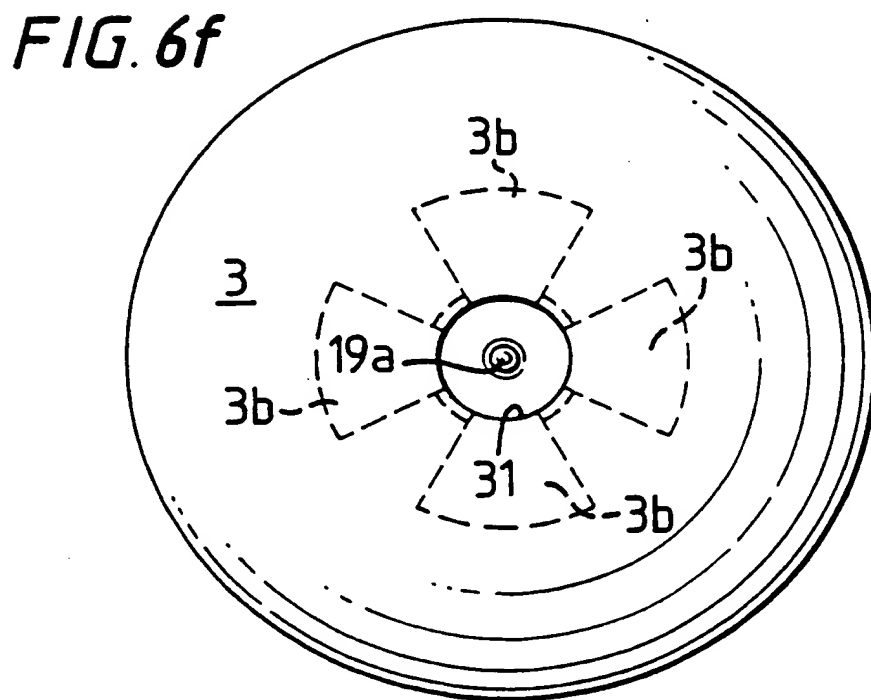
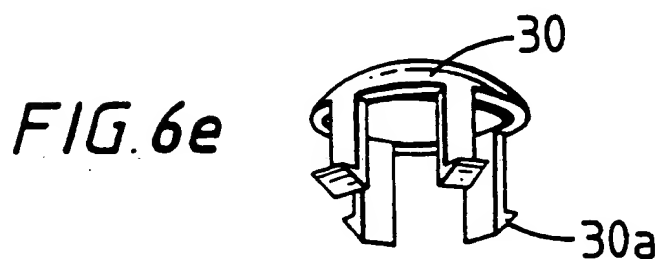
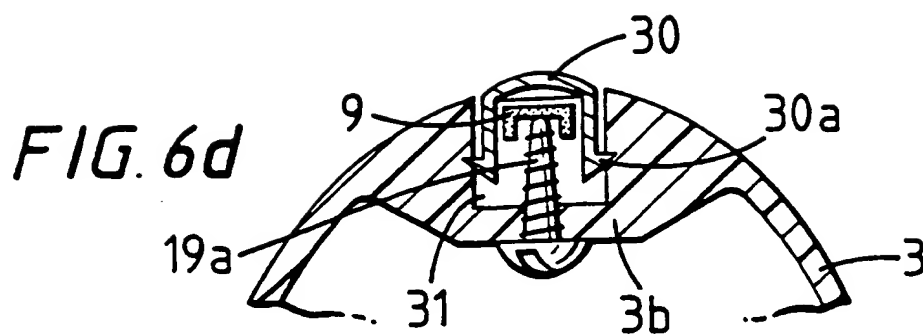


FIG. 6c



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INTERNATIONAL SEARCH REPORT

Internation Application No
PCT/GB 95/00788

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A63H13/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A63H B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB,A,2 267 225 (PLASTRONICS) 1 December 1993 see the whole document ---	1,3-6
X	US,A,3 664 538 (FIORETTI) 23 May 1972 see figures ---	1,3-14, 17,18
A	US,A,2 998 896 (MILLER) 5 September 1961 ---	1
A	GB,A,2 010 221 (UNITED HELLENIC CRAFTS S.A.) 27 June 1979 -----	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

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- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *&* document member of the same patent family

Date of the actual completion of the international search

14 June 1995

Date of mailing of the international search report

07.07.95

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-2267225	01-12-93	NONE	
US-A-3664538	23-05-72	NONE	
US-A-2998896	05-09-61	NONE	
GB-A-2010221	27-06-79	BE-A- 872807 FR-A- 2411778	30-03-79 13-07-79